

Applicants: Goldberg et al.
Application No.: 10/730,671

REMARKS/ARGUMENTS

Claims 1-35 are currently pending in this application. Claims 1, 9, 16, 18 and 25 have been amended to more particularly and distinctly claim the subject matter of the present invention. Applicants submit that no new matter has been added by the amendment herein.

Claim Rejections - 35 USC § 102(e)

Claims 1-4, 6-8, 16, 18-29, 31 and 32 have been rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application No. 2004/0204108 by Etkin et al. (hereinafter "Etkin"). Applicants respectfully disagree.

With respect to claim 1, the Examiner asserts that Etkin discloses measuring an error in the alignment of the beams as the base station transmits signals to the mobile stations. Applicants respectfully disagree.

Claim 1, as amended, recites a method of adjusting the beam of a communicating entity based on a correction factor that is a fraction of the measured error. Etkin does not disclose such a method and therefore does not anticipate the present invention.

Etkin is not related to alignment of beams emanating from two communicating entities. Etkin is directed to adjustment of beam width and induced

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SNR fluctuations in accordance with the number of mobile stations in a sector to maximize the throughput of the base station. (See paragraphs 0020, 0023, 0024 and 0030, emphasis added). In Etkin, a base station adjusts a beam width and SINR fluctuations based on the number of mobile stations in a sector served by the base station. Etkin discloses that for a small number of users a broader beam is better whereas a highly directional beam is better for a large number of users. The disclosure in Etkin (paragraph 0049) cited by the Examiner is not related to a measurement of an error in alignment (i.e., the degree of misalignment) of two beams from two communicating entities, but just an effect of beam sweeping by the base station. Etkin fails to disclose a scheme of measuring an error in alignment of two beams emanating from two communication entities, determining a correction factor based on the measured error, and readjusting the beams to realign the two beams.

Moreover, in claim 1 of the present invention, two communicating entities do not communicate beam forming information not only during the initial stage before beam forming operation but throughout the communication process. Both entities do not know whether the other is adjusting a beam direction for fixing the misalignment of the two beams. In such a situation, there is a possibility of oscillation caused by simultaneous adjustment by the two entities. In order to avoid

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this oscillation, only one entity is selected to adjust its beam in order to realign the beams in claim 1 of the present invention.

In contrast, in Etkin, the two communicating entities, (i.e., a base station and a mobile station), communicate with each other and the base station adjusts the beam width and induced SINR fluctuations based on the reported data rate control (DRC) from the mobile stations. In Etkin, the base station constantly receives DRC signals from the mobile station, and makes adjustments on the beam width and fluctuations based on the reports from the mobile stations. In contrast, in claim 1 of the present invention, two communication entities do not communicate beam adjustment information. The selected entity adjusts its own beam without receiving any information for beam adjustment from the other entity. Therefore, claim 1 is clearly distinguishable from Etkin.

With respect to claims 16, 18, 25 and 31, as presented with respect to claim 1, Etkin fails to disclose a scheme of measuring an error in the alignment of two beams emanating from two communication entities, determining a correction factor based on the measured error, and adjusting a parameter for adjusting the beams in order to realign the two beams. Therefore, claims 16, 18, 25 and 31 are not anticipated by Etkin for the same reasons stated above.

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Claims 2-4, 19, 20, 24, 26-29 and 32 are dependent claims of claims 1, 18, 25 and 31, respectively. Therefore, it is believed that these dependent claims are also allowable for the same reasons stated above.

Claim Rejections - 35 USC § 103(a)

Claim 5 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Etkin in view of the Examiner's taking of official notice that use of a fraction of 0.5 is well known in the art. Claims 6-8 and 21-23 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Etkin in view of U.S. Patent No. 6,225,961 to Benjauthrit (hereinafter "Benjauthrit"). Claims 9-15, 24, 33-35 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Etkin in view of U.S. Patent No. 6,665,545 to Raleigh et al. (hereinafter "Raleigh"). Claim 17 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Benjarthrit in view of Raleigh.

With respect to claim 5, claim 5 is a dependent claim of claim 1 and is allowable for the reasons presented above.

With respect to claims 6-8 and 21-23, as presented with respect to claim 1, claim 1 as amended recites a method of adjusting the beam of a communicating entity based on a correction factor that is a fraction of the measured error. Etkin fails to disclose such a method. Additionally, Etkin fails to disclose measurement of the degree of misalignment of two beams, but merely discloses adjustment of beam

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width and SINR fluctuation in accordance with the number of mobile stations. Since the main reference, Etkin, is clearly distinguishable from claims 6-8 as depending from the amended claim 1, claims 6-8 are allowable over Etkin in view of Benjauthrit.

With respect to claim 9, as amended, Etkin fails to disclose a scheme of measuring an error in alignment of two beams, determining a correction factor based on the measured error, and adjusting beams by each communicating entity according to their correction factor in order to realign the two beams. Therefore, claim 9 is clearly distinguishable from Etkin, and the corresponding dependent claims 10-15 are also allowable for the same reason.

With respect to claims 24 and 33-35, these claims are dependent claims of claim 18 and 31. Therefore, it is believed that claims 24 and 33-35 are also allowable for the same reason stated above.

With respect to claim 17, Benjauthrit fails to disclose a scheme of measuring an error in the alignment of the two beams emanating from the two entities, determining a correction factor based on the measured error for each communicating entity, and adjusting the beam of each entity according to the corresponding correction factor. In Benjauthrit, only the antenna located on the ground adjusts beams to receive and transmit signals compensating for the planetary aberration, and the spacecraft does not adjust the beam direction. In

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contrast, in the claimed invention, two communicating entities correct errors in beam alignment according to a correction factor selected for each communicating entity. Moreover, in Benjauthrit, what is measured and compensated for is the planetary aberration, not the error in alignment of the two beams emanating from the antenna and the spacecraft. In contrast, in the claimed invention, what is measured and compensated for is an error in alignment of the two beams emanating from the two communicating entities. Therefore, Benjauthrit is clearly distinguishable from claim 17.

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Conclusion

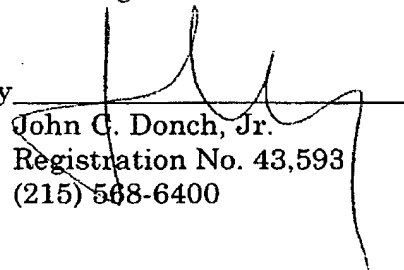
If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

In view of the foregoing remarks, Applicants respectfully submit that the present application is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

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